meddle and stimulate; they give to our streets and halls a variegated, flashing, exciting aspect, which at the best we may call brilliant and pictorial. They encourage artifice rather than art; they prefer crowded, ostentatious and novel things, for the artistic instinct, free from the masculine mind, is wilful and unreasoning; it asks only for excitement. If women have made so much confusion and ostentation in the domain of taste, left to themselves, would they increase the harmony of, and develop justice in, legislation? What answer?

TO THE PUBLIC.

THE Publishing House by which the present Journal is issued has been extensively engaged, for nearly half a century, in the work of promoting general education, and diffusing information among the people of the United States, through the medium of valuable books, in all the leading departments of knowledge. In further pursuance of this important object, and recognizing the increasing tendency of the public to cultivate the periodical form of literature, the publishers have engaged in the enterprise of a Weekly Journal, which they design to make worthy of the liberal patronage of the reading community.

Omitting ordinary news, and avoiding partisan advocacy, both political and sectarian, the JOURNAL will be devoted to general literature, to science, art, and education, and to the diffusion of valuable information upon subjects of public importance. It is intended to make use of all resources, original and selected, domestic and foreign, which can give interest and variety to its pages; and neither exertion nor expense will be spared to secure the aid of the best talent of the time. We abstain from the large professions and the parade of conspicuous names so common on these occasions, and, trusting to the intelligence of the people, shall be content to let the Journal speak for itself.

THE NEW EDUCATION.

UNDER the title of "The New Education," a writer in the *Atlantic Monthly* of February and March gives an account of the scientific and polytechnic institutions of this country, and what should be the preparation for entering them. Much of the information he offers is interesting, and he has several excellent suggestions; but what most struck us in the discussion was, that for the "new education" he provides no adequate basis. He says that all but one of the scientific and technological schools require no preparation in Latin for admission, "and in none of them are the classics taught." But, instead of accepting this position as an abandonment of the regular study of Latin by the "new education," he maintains that it should be merely put back to the preparatory period, contending that until seventeen all should be educated together.

This defence of the early study of Latin is a step backward, for the most enlightened educators of the present time advocate its postponement to the years of mental maturity; and this is all the more necessary when we consider the grounds on which the writer places its claims. Latin is to be acquired, not because of its value as an introduction to the language of science—this is vehemently repudiated—but because of the wealth and perfection of the literature it contains. That is, a boy who proposes to study the practical sciences, in addition to his thorough study of English (which the writer insists on), and various other preliminary studies, is to carry the acquisition of Latin to such perfection that the mind can move in it with full freedom, so as to enjoy the great masterpieces of its literature.

Now, it is testified to with emphasis by the best observers, that even of those who give themselves entirely to the classical course, in the college as well as the academy, not one in ten arrives at this result. How absurd, then, to suppose that it can be attained by students at seventeen! We refer those, who wish to see this point ably handled, to the argument on "Early Mental Training," by Dr. Barnard, of Columbia College.

Nothing is more notorious, than that the attempt to teach the dead languages to boys generally results in such a disgust with the whole subject, that they do not pursue them when college discipline ceases; and hundreds of the most eminent men who had kept up their scholarly acquisitions attest that they were never able to get over the prejudices and painful associations of early classical study. This consideration evidently does not affect the writer in the *Atlantic;* though, strangely enough, he raises an objection to the early study of science on this very ground. He objects to the study of elementary science in early life, because "we have seen many cases in which too early dabbling with the physical sciences proved a positive injury in later years." But, what is still more extraordinary, while rejecting science itself, he would still teach children the logic of science. He says: "One cannot too early teach a child the distinction between a fact and an inference from a fact." Although confessing that this distinction is but rarely grasped by the mature mind—saying that "few adults appreciate this fundamental difference in its full strength"—yet he thinks we cannot too early teach a child these abstract relations of mental philosophy. Did it never occur to him what the effect of this kind of "dabbling" might be upon the pupil's subsequent mental experience?

The writer of these articles seems quite to overlook the order of mental unfolding by which the training of the perceptive faculties should precede and prepare for the higher action of the reflective powers. This, indeed, must be the corner-stone of the edifice of "the new education." It must begin with the observation of the properties and relations of concrete objects which science deals with and Latin does not; and, as the mental faculties of the child gradually strengthen, and it begins to get intelligible command of abstract relations, the skilful teacher will draw attention to the mental operations by which facts and inferences are discriminated.

WHAT WE MEAN BY SCIENCE.

IN the plan of this JOURNAL, scientific subjects are to have a prominent share of attention; and as there is not a little confusion in the popular mind as to the ideas conveyed by the term "Science," it is desirable to get a definite understanding of it. At all events, it is necessary to indicate as clearly as possible the signification which will be attached to the word in these pages.

In its prevailing use, the term science suggests a special kind of knowledge which is different from common knowledge, and pertains to a particular class of subjects which are looked upon as foreign to the interests of common life. It is generally regarded as relating to external or physical objects, and calls up ideas of minerals, insects, drug-shops, or electrical exhibitions, with a copious literature of forbidding terms. In conformity with this notion, the science department of popular journalism usually consists of a mass of items thrust into an obscure place, where we are briefly informed of the discovery of a new mineral or asteroid, a novel chemical process, a hitherto undescribed zoophyte, or the latest inventive exploit in the way of churns. Science has its periodicals professedly and properly devoted to the technical details and results of research. These are minced and sorted, and then reproduced for the edification of the public. This information is no doubt useful; but, to offer it as affording any just idea of science, is little better than a caricature. The time has come when this noble term should be redeemed from these degrading associations, and made to stand for the larger and higher things which it now truly represents. Science is not the peculiar property of a few curious persons, who spend their days in watching bugs, or their nights in watching the stars. It is something, on the contrary, which belongs to the mind itself; which pertains to our very modes of thinking, and therefore concerns everybody. It is something to be used in reading, conversation, and business, at home and in the street, week-days and Sundays, in school, at the lecture, and the political gathering. Let us see how this is.

The literal meaning of the term science is *to know*. But it has been found that there are two kinds of knowing; we may know a subject loosely and vaguely, or with clearness and precision. So important has this distinction now become, that it is necessary to mark it in language, and so the word science has come to be applied to one of those kinds of knowledge; it means to know *accurately*. In the course of time and experience, knowledge slowly passes from the indefinite to the definite, from the vague to the precise. This change is of the nature of a growth, and hence, in its *quality*, science may be defined as the higher or more perfect stage of developing knowledge.

For example, men, in the rudest ages, observed that the days were longer in summer than in winter, and that there was a constancy in the relative position and a regularity in the movements of the stars: this was the dim beginning of a knowledge which has grown at length into the splendid science of astronomy. So it was known to everybody that fuel disappears in combustion, and that stones are altered by fire; and these vague notions have been, in time, unfolded into the science of chemistry. In like manner, it was understood, even in periods of earliest barbarism, that with scarcity the price of food rises; and that bits of metal may be made serviceable to carry on exchanges: these were the germs which have grown into a body of definite and connected truths, which form the science of political economy. Again, at the earliest dawn of intelligence, men knew that objects seen together are apt to be remembered together: this rudimental fact has been expanded in modern times into the science of psychology.

Such being the essential character of science, the question next arises, how much does the term comprehend? Our knowledge of Nature is *all* of this growing or progressive kind. In every aspect of the natural world the explanations were at first crude and imperfect, and have gradually ripened into greater distinctness and precision. We are thus brought to the full breadth of meaning of the term science, which is nothing less than the latest and truest interpretation of the order of the world at which the human mind has arrived. It is the perfected mode of thinking in its application to all the phenomena of Nature which can become the subjects of thought.

But, it will be asked, What do you mean by Nature? We mean the whole system of appearances—objects and actions—by which we are surrounded in the present state of being. It includes the entire realm of existence and activity, material and mental, with all their interconnections and interactions, which constitute the environment of man. As the material world is but a part of the natural order, physical knowledge is but a part of science. Our knowledge of mind and character, of the springs and limits of human action, of the relations of men and the conditions of social welfare, may be either loose and confused, or definite and accurate. This kind of knowledge conforms equally to the conditions of growth, and, therefore, has its true scientific aspects. But we can only comprehend the present attitude of the subject by referring to the relations which subsist among the various departments of thought.

The purely physical sciences, corresponding to the material phases of Nature, are the simplest, and have been developed first. By studying the internal or atomic changes of matter, the science of chemistry has been arrived at. Inquiries concerning the air have led to meteorology, and investigations into the earth's crust have given rise to geology. But the intellectual movement thus exemplified is far from stopping with an exploration of material phenomena. Success here but sharpens the mind for the further research of truth. These departments of physical study have their highest value as a preparation for something beyond. They are but the training-ground of the human intellect for larger spheres of inquiry. The development of the physical sciences has produced grand and beneficent results, as all men know. But the advance of industrial civilization, to which they have led, is far from being their most important effect. Nor is their disclosure of the order of material Nature, by which man has been translated from the darkness of ignorance and superstition into the light and hope of knowledge, by any means their strongest claim to honor. It is in that higher education, and nobler discipline of the human mind, which can alone qualify it to enter upon the more exalted questions of the real nature of man himself, and his true relations to the surrounding world, and to his fellow-men; it is here that the nobler function of the physical sciences is to be sought.

That accuracy of thinking, which it is the business of science to enforce, has led to the detection of those uniformities in the course of Nature which we term *law*. More and more clearly is it perceived that all kinds of action exemplify cause and effect, and therefore conform to law; and more and more apparent is it also becoming that all measures of improvement, individual and social, must depend upon our understanding of the conditions and laws upon which all improvement depends. It is not enough that these conditions be vaguely apprehended; they must be vividly realized; and this vivid perception must be so deeply incorporated into the very habits of thought as spontaneously to rule the conduct. It is not sufficient to know, in a general way, that fresh air is salutary, and foul air injurious; the appreciation of the effects must be so clear and intense as to control action like an instinct. To bring about this state of mind, slowly, of course, in the mass of the people, is the duty and destiny of science. Its supreme educational office is to teach men to think more carefully and closely upon whatever subject they are required to think. Its larger use is to habituate them to guard against the disturbing influence of the feelings and the warpings of prejudice, to look beyond the immediate and to forecast distant consequences, to weigh evidence and avoid those errors of judgment which lead to rash and mistaken practice.

Imperfect knowledge is misleading; the more accurate it is, the better it serves for guidance. But this is no more true in navigation or mining, than it is in commercial business or in teaching. The subjects, however, are in some cases simpler than in others, and the simpler must obviously serve as stepping-stones to the more complex. It is not that knowledge is to be carried over from one field to another, but the mental training acquired in one field is to be employed in another. Granted that eminent skill in mathematics will not be a suitable preparation for a judge, or expertness in chemistry qualify for the intelligent management of a prison; granted that the knowledge conferred by scientific studies, as at present arranged, is not that demanded in dealing with the practical questions of every-day life; the fact, nevertheless, remains, that the cultivation of scientific, that is, accurate habits of thought, is the best preparation for action in all circumstances of responsibility.

ADULTERATION AND ITS REMEDIES.

THE *New York World* has recently done an important public service by appointing itself a commission to inquire into the state of food, drink, and drugs consumed by the inhabitants of this city. This idea of not waiting for the action of government, when a needed public work is to be done, but of nominating and electing one's self to the office of attending to it, strikes us as admirable and worthy of imitation. The *World* has summoned Science to make an inquest, with test-tube and microscope, into the honesty of New-York grocerymen. We are glad to note this emphatic recognition of the fact that science has intimate relations with morality. The subject being thus handed over to it for investigation, the report comes back that the morals of metropolitan commerce are not of the purest character. It is found that the whole community is enmeshed in a system of trading impostures, both quantitative and qualitative, in regard to the food it eats, the beverages it drinks, the medicines it takes, the kerosene it burns, and the air it breathes; and, if the investigation had been pushed a little further, it might have been added that the clothes it wears, the beds it lies upon, the gas it lights, the jewelry it sports, the cosmetics it delights in, and even the paper it reads, each has its element of cheating and imposition.

This disclosure is important, because, if we are actually investing our bodies with textile lies, weaving lies into our living tissues, and trying to correct abnormal functions with remedial lies, let us by all means be frequently reminded of it. These things have been long practised, and it has long been known that they were practised. The manuals of chemical examinations, microscopic guides, pamphlets for detection, magazine articles of exposure, wailing essays, and editorial warnings, have accumulated into a regular literature of the subject. In accordance with that rhythm of movement which we observe in the mental as well as in the material world, after an interval of obliviousness, the matter breaks out in the shape of a public spasm; there is an earthquake among the grocers, and execration abounds for a season, but, the excitement being discharged, all thing soon lapse into their old quietude.

Yet something is gained with every new convulsion. Accumulated experiences in time modify both feeling and thought, and work out new states of mind, which lead to new resources of defence against the evils of life. To be barely conscious of the existence of an evil, by no means puts us in the attitude to grapple with and destroy it. We must experiment with it, and reach right action through a course of failing trials. What, then, is to be done about these mischiefs of adulteration; for, making every allowance for exaggeration, there is a great deal of truth in the exposures? There are four modes of dealing with it.

The first is the denunciatory. It reprobates the wrongs, and anathematizes the guilty. The watch-towers of morality stand thickly in our midst, and every seventh day the people gather to listen to directions for "the right ruling of conduct." The displeasure of Heaven with immoral actions is emphatically declared, and divine vengeance upon those who commit them threatened. All are searched out, and found wanting somewhere. The auditors then return home to lunch upon adulterated bread, contaminated condiments, falsified coffee, and sophisticated wine. Something is, no doubt, effected by this mode of treating evil conduct, but, under any amount of denunciation, the rascally grocer flourishes. Mischiefs of this kind are not to be dismissed from society by a wave of the hand, or driven out by rhetorical onslaughts.

Then there is the legal remedy. We are bid to tighten up the laws and pile up the penalties. But the efficiency of law is not in the ratio of its stringency; with a disproportion between offence and penalty, legislation becomes self-defeating. Besides, the very pettiness of the transgressions, in this case, makes punishment difficult. Law, also, has done some service in this matter, but the abuses have grown in spite of it.

A third method is, that private enterprise shall take up the matter and deter dealers from fraudulent practices by the danger of exposure. This is theoretically right, but practically insufficient, as private enterprise is a somewhat intermittent agency. The field has been long and temptingly open to it, but it has hitherto done little more than keep us advised, from time to time, of the extent of the mischief.

We now propose a fourth method of relief, which, while it is neither so short nor so sharp as the foregoing, is the only one adequate to meet the case. It is simply that the people interested in these proceedings shall be instructed to take care of their own interests. Where do these omnipresent malpractices have their roots? In public ignorance, and its consequent indifference. The people know very little about these things, and therefore care but little. They breathe poisoned air when they can get pure air at the same price; how, then, can they be expected to distress themselves about the concealed impurities in their food and drink? It is this ignorance and carelessness which makes them the victims of sharpers, and which makes the sharpers possible. While the dupes remain, it is of small use to root out the quacks; their places would be quickly supplied with new ones.

We charge these evils of adulteration to public ignorance, but we do not mean by this the mental vacuity or stupidity of the refuse of society; we mean that lack of general intelligence concerning common things which prevails in all ranks, and may be as noticeably exemplified in the college graduate as the illiterate blockhead who cannot read. We boast of our education, and the city abounds in public schools, seminaries, and colleges. These institutions impart much valuable information, but they are deplorably deficient in that which is most important. The pupils parse and declaim; they dig among the roots of algebra, and roam through geography and history; they learn all kinds of things, except those which involve their very life-needs. We say, then, direct the instruction in the New-York schools, and of the public schools throughout the country, to its proper end—"the preparation for right living." So long as we have not begun to teach the things in which life and death are involved—so long as the community is swindled and poisoned in its daily means of maintaining existence, and is not only ignorant of all means of defence, but of the very fact of the imposition, let us remit somewhat of our boasting, and talk in modest undertones about our "universal education."

The plan of relief we now propose is not to be objected to as impracticable. Every public school in the city ought to have a laboratory, and every boy or girl, fifteen years of age, should be instructed in elementary chemical testing and the use of the common microscope. This is entirely feasible: no more mental capacity is required to make a rough analysis of a sample of saleratus than to make an analysis of a sentence, or to work out a problem in fractions. This practice, moreover, would train the observing powers—a most important part of education, and one for which there is at present no adequate school provision. This is the true point of attack upon the system of commercial imposture from which we suffer. Let it once be understood that even half a dozen of the leading public schools are prepared to make this subject a regular study; let competent instructors be provided (and one such might officiate at several places), and let samples of the common articles of domestic consumption be made regular object-lessons of careful examination, and not only would the mental cultivation thus afforded be of itself valuable, but it could not fail to exert a powerful influence in repressing fraudulent practices. Definitely established, and with the sympathy of the community, it would act as a permanent commission of inquiry, and might be made to operate with energy and efficiency. Moreover, as the pupils went out into life armed with this knowledge, families would begin to have their defence, and a habit of searching into these matters would gradually arise among the people. Such an example would also be imitated by other schools throughout the country.

The impulses of scientific inquiry in past times have largely originated in the various exigencies of society, which required to be met and relieved; when education begins to respond to these requirements, and to prepare the young for the practical and urgent work of life, the most salutary results will assuredly be realized.